REMARKS

Claims 1-13 are pending in the application.

Claims 1-13 were rejected.

Claims 1, 4, 6, 9 and 12 have been amended.

I. 35 U.S.C. §103 Claim Rejections

In the Office Action, claims 1-3 and 6-8 were rejected under 35 USC §103(a) as being unpatentable over the prior art described in Applicant's Specification in view of Pejihan *et al.* (Error Control Using Retransmission Schemes In Multicast Transport Protocols For Real Time Media, 1996, IEEE). Claims 4-5 and 9-13 were rejected under §103 as being unpatentable over the prior art described in Applicant's Specification and Pejihan *et al.*, in view of Miller *et al.* (U.S. Patent No. 5,727,002). Applicant respectfully traverses these rejections and requests reconsideration by the Examiner.

The invention is directed to error recovery in a Layer 2 Tunneling Protocol (L2TP) channel, and specifically provides a new process for a sender-initiated data recovery process. As taught by the Applicant, L2TP maintains a sequence variable, Sr, at a receiving peer representing the expected sequence value of the next packet sent from a sending peer. Upon receipt at the receiving peer of a packet having a sequence indicia corresponding to the expected, or Sr, sequence value, the value of the Sr variable is incremented by 1. Correspondingly, the incidence of the received-packet sequence indicia being greater than the expected (Sr) value -- *i.e.*, the case of the correct packet in the sequence not having been received by the receiver (lost packet), will result in the Sr value remaining unchanged.

With L2TP, the current value of the Sr variable is also sent from the receiving peer back to the sending peer in a defined field of a packet being sent from the receiver to the

sender. Accordingly, the receipt by the sending peer of an Sr value that does not match the sent-packet sequence provides an indication of a lost packet. This indication is referred to as a negative acknowledgment.

According to the invention, a new variable, *multiple-negative-acknowledgments*, is defined and maintained at the sending peer, along with a counter to maintain a count of the number of such negative acknowledgments received. After a predefined number of such negative acknowledgments are received -- *i.e.*, the counter value is equal to that predefined number, a recovery process is initiated by the sending peer.

While, as Applicant described in her application, a sender-initiated recovery algorithm is known in the art for L2TP, that prior-art mythology only operates to initiate a recovery process upon the expiration of a time-out interval, as determined by timing mechanism maintained at the sending peer, prior to receipt of a positive acknowledgment from the receiving peer. Applicant believes that this prior-art timing-mechanism for initiating a recovery process by the sending peer is clearly different from the sender-initiated recovery process described and claimed according to her invention, and does not read the Office Action to suggest otherwise. On the contrary, the Office Action cites the teaching of Pejihan as teaching an accumulation of a number of negative acknowledgments and posits that it would have been obvious to combine this feature of Pejihan with the general teaching of L2TP operation provided in the application to achieve the sender-initiated recovery process of the invention. Applicant respectfully submits that a fair reading of Pejihan does not support the construction supplied by the Office Action, and moreover that Pejihan does not represent analogous art that would be looked to by one skilled in the art for addressing the problem to which the invention is directed.

Initially, it is to be noted that the methodology taught by Pejihan is not even remotely related to a Layer 2 Tunneling Protocol communication system. Rather, the teaching of Pejihan is directed to systems for multicasting a single information stream to multiple receiving clients, and for determining when and how often to provide retransmission of packets indicated to be lost based on negative acknowledgments received from ones of the receivers receiving the multicast transmission from the multicast sender. Moreover, the thrust of Pejihan is clearly directed to the use of either timing mechanisms or immediate retransmission upon receiving a negative acknowledgement for governing such packet retransmissions, thus effectively teaching away from the central idea of the invention. In a single sentence addressed to a summary of other authors work, Pejihan states that the authors provide a "threshold based on the number of [receiving] hosts sending NACK's [negative acknowledgements] for a given packet." The Office Action relies on this minor extract from Pejihan as the basis for its conclusion that Pejihan teaches the limitation of Applicant's invention whereby an L2TP sender initiated recovery process is initiated upon the detection of a predetermined number of sequential negative acknowledgements being received from a single receiver.

This is simply not a tenable construction of Pejihan. In the first place, there is insufficient detail provided by Pejihan of the other authors work to constitute an enabling disclosure, and therefore this teaching cannot properly be applied as a basis for a §103 rejection. Moreover, even on the limited information provided by Pejihan, it is clear that any accumulation of negative acknowledgements by the referenced methodology is directed to single NACKs received from multiple hosts of the multicast transmission. Plainly there is no analog there to the receipt and processing of multiple negative acknowledgements from a

single receiver as a basis for determining a need for initiating a recovery process by the sender, as carried out by the invention.

Although the Applicant believes that the foregoing showing the invention is not shown or suggested by a combination of the prior art described in the application and the teaching of Pejihan is also dispositive of the claim rejections based on that combination and further in view of Miller, it is also clear that Miller cannot reasonably be construed to teach the limitations to which it is applied by the OfficeAction.

As a starting point, it is to be noted that, like Pejihan, the methodology taught by Miller is not even remotely related to a Layer 2 Tunneling Protocol communication system. And, like Pejihan, the teaching of Miller is directed to a system for multicasting a single information stream to multiple receiving clients. As part of its methodology, Miller sets up a procedure for determining frames of information which were either not received, or received in error by various of the receiving clients through negative acknowledgments sent back to the sending server by the clients. While an embodiment of Miller does contemplate the sending of multiple negative acknowledgments from particular clients, it is critical to note that this is simply an accumulation of negative acknowledgments at a client, with each one relating to a different packet error, and which accumulated negative acknowledgements are sent to the server at the same time as a matter of communication efficiency.

As noted above, the invention, in sharp contrast, is addressed to a single communications link between one server and one client, and more important, the sender-initiated recovery methodology of the invention contemplates sequential transmission from the client to the server of individual negative acknowledgments, each addressed to the same error -- i.e., failure of the client to receive a particular packet sent by the server. That failure, as

taught by the Specification, is manifested in the unchanging value of the Sr variable at the client as additional packets are sent from the server. Then, according to the method of the invention, upon receipt by the server of the same Sr value a predetermined number of times, indicative of the client not having received the packet corresponding to that Sr value, the server initiates the recovery process.

While Applicant believes that her invention is clearly distinguished from the teaching of the art cited by the Office Action, she has nonetheless determined to amend each of her independent claims to more clearly establish that distinctiveness. As so amended, Applicant believes that all claims are clearly patentable over the art of record here.

II. Conclusion

Having fully addressed the Examiner's rejections herein, it is believed that, in view of the preceding amendments and remarks, this application now stands in condition for allowance. Such allowance is respectfully requested.

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Please charge any fees due in respect to this amendment to Deposit Account No. 50-1944.

Respectfully submitted,

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I hereby certify that this Response to Office Action is being deposited with the United States Postal Service as First Class Mail, postage prepaid, in an envelope addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313 on July 29, 2005.

By: _____
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